

REMARKS

Amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 are for the purpose of clarifying what Applicant regards as the claimed invention. No new matter has been added.

I. Claim Rejections under 35 U.S.C. § 101

Claims 1-29 and 31-66 stand rejected under 35 U.S.C. § 101.

Applicant respectfully notes that claims 10, 34, and 55 contain means-plus-function limitations, which according to 35 U.S.C. § 112, paragraph 6, refer to the corresponding structures described in the specification that perform the recited functions. Thus, these claims are tied to structure(s) that perform the recited function by virtue of their means-plus-function status. For at least the foregoing reasons, Applicant submits that these claims and their respective dependent claims satisfy § 101, and request that the § 101 rejection be withdrawn.

Claims 1, 15, 24, 40, 49, and 58 have been amended to recite a “processor.” Thus Applicant respectfully requests that the § 101 rejection be withdrawn with respect to these claims and their respective dependent claims.

II. Double Patenting Rejections

Claims 1-29 and 31-63 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-4 and 7-63 of copending U.S. Patent Application No. 10/656,478. Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on 10/656,478 moot with respect to these claims and their respective dependent claims.

Claims 1-29 and 31-63 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 33-43 and 44-49 of copending U.S. Patent Application No. 10/678,741. Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on 10/678,741 moot with respect to these claims and their respective dependent claims.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-27 of U.S. Patent No. 6,959,266. Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on U.S. Patent No. 6,959,266 moot with respect to these claims and their respective dependent claims.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-48 of U.S. Patent No. 6,937,696. Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on U.S. Patent No. 6,937,696 moot with respect to these claims and their respective dependent claims.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-53 of U.S. Patent No. 6,690,965. Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on U.S. Patent No. 6,690,965 moot with respect to these claims and their respective dependent claims.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-28 of U.S. Patent No. 6,621,889.

Applicant believes that the amendments to claims 1, 10, 15, 24, 34, 40, 49, 55, and 58 have rendered the double patenting rejection based on U.S. Patent No. 6,621,889 moot with respect to these claims and their respective dependent claims.

III. Claim Rejections under 35 U.S.C. § 103 based on Kaufman and Takeo

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 7,006,862 (Kaufman) in view of U.S. Patent No. 6,125,166 (Takeo).

A. Claims 1, 10, and 15

Claim 1 has been amended to recite gating a medical procedure based on the first composite image, wherein one of the first and second images *is a real-time image with respect to the act of gating the medical procedure* (Emphasis Added). Claims 10 and 15 have been amended to recite similar limitations. Kaufman does not disclose or suggest the above limitations.

According to page 2 of the Office Action, Kaufman discloses a composite image, which is determined based on real-time images, citing to paragraphs 58 and 63 of the publication version of Kaufman. In particular, according to the Office Action, the cited paragraphs of Kaufman allegedly disclose displaying selection of image slices to user in real time to allow the user to view images in real-time. Applicant believes that the amendments to claims 1, 10, and 15 have rendered the rejection based on Kaufman moot. This is because to the extent that the Examiner considers the images in Kaufman that are *displayed in real-time* to be “real-time” images, the real-time aspect of these images is only with respect to the act of displaying the images, and not with respect to any act of gating a medical procedure. In other words, Kaufman

discloses images that are allegedly “real-time” with respect to the act of displaying the images, and does not disclose or suggest any image that is real-time with respect to the act of gating a medical procedure. For example, there is nothing in Kaufman that discloses or suggests that any act of gating a medical procedure is performed in real-time with respect to a real-time image (e.g., shortly after the image is generated).

Also, according to page 2 of the Office Action, real-time image acquisition schemes are known, and providing real time gating is allegedly regarded as an obvious difference. However, Applicant respectfully submits that gating a medical procedure based at least in part on a *composite image* (which in turn, is based at least in part on the first and second images, wherein one of the first and second images is a real-time image with respect to the act of gating the medical procedure) is not disclosed in any of the cited references, and therefore, is believed to be non-obvious in view of the cited references.

Further, Applicant notes that Kaufman discloses determining a composite image, which is used to determine calcium detection or 3-D rendering (see abstract and c8:15-16). Notably, the calcium detection and the 3-D rendering do not involve any *gating*. Thus, none of these procedures can be analogized as the claimed “medical procedure” that is “gated” based on a composite image. Also, the calcium detection and 3-D rendering described in Kaufman are actually performed retrospectively - i.e., long after the projection images are obtained (see also, title, c4:46-48, and c14:65). Thus, to the extent that the calcium detection and 3-D rendering of Kaufman is analogized with the claimed “medical procedure,” such procedure does not involve images that are real-time images with respect to the procedure.

Takeo also does not disclose or suggest the above limitations, and therefore fails to make up the deficiencies present in Kaufman. In particular, Takeo discloses a method of forming an energy subtraction image, which is used for diagnosis of an illness (c3:47-54), and not for gating a medical procedure. Since Kaufman and Takeo both fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of claims 1, 10, and 15. For at least the foregoing reasons, claims 1, 10, and 15, and their respective dependent claims, are believed allowable over Kaufman, Takeo, and their combination.

B. No prima facie case of § 103 rejection for dependent claims 2-9, 11-14, 16-23, and 64-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 2-9, 11-14, 16-23, and 64-66 are found, and that to the extent that these elements are found in the secondary reference Takeo, the Office Action did not provide a motivation to combine Takeo with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element. Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for each of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

IV. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, and Fitzgerald

Claims 24-29, 32, 33, 34-39, 40-48, and 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo, and further in view of U.S. Patent Application Publication 2005/0027196 (Fitzgerald).

A. Claims 24, 34, and 40

Claim 24 has been amended to recite a plurality of templates, each of the templates having an image and treatment data, wherein the treatment data comprises radiation treatment data, and wherein *each of the plurality of templates corresponds to a phase of a physiological cycle* (Emphasis Added). Claims 34 and 40 have been amended to recite similar limitations. As discussed in the previous response, none of the cited references discloses or suggests the templates as described in the claims. According to pages 2-3 of the Office Action, paragraphs 12, 14, and 23 of Fitzgerald allegedly disclose multiple radiation plans, which the Examiner analogized as the claimed “templates.” Applicant believes that the amendments to claims 24, 34, and 40 have rendered the rejection based on Fitzgerald moot. In particular, there is nothing in Fitzgerald that discloses or suggests a plurality of templates, with each template corresponding to a phase of a physiological cycle, as described in the claims. For at least the foregoing reasons, claims 24, 34, and 40, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Fitzgerald, and their combination.

B. Claims 25, 35, and 41

Claim 25, which depends from claim 24, further recites that the act of registering comprises selecting a template from the plurality of templates that *best matches an image* in the input image, wherein each template comprises an image and treatment data (Emphasis Added). Claims 35 and 41 recite similar limitations. None of the cited references discloses or suggests the above limitations. Applicant respectfully notes that the Office Action did not specifically address such limitations, and therefore, requests that the rejection for claims 25, 35, and 41 be withdrawn.

C. Claims 49, 55, and 58

Claim 49 recites:

providing a template;
acquiring an input image of a target region;
registering the input image with the template;
determining a position of the target region based at least in part on the
registering; and
gating a medical procedure based at least in part on the determined
position of the target region.

Claims 55 and 58 recite similar limitations. Thus, the claims describe determining a position of a target region based at least in part on a registration between an input image and a template, and gating a medical procedure based at least in part on such determined position. According to page 8 of the Office Action, Fitzgerald allegedly teaches tracking a position of a target area. However, there is nothing in Fitzgerald that discloses or suggests determining a position in the manner described in the claims. For at least the foregoing reasons, claims 49, 55, and 58, and their respective dependent claims, are believed allowable over the cited references and their combination.

D. No prima facie case of § 103 rejection for dependent claims 25-29, 31-33, 35-39, 41-48, 50-54, 56-57, and 59-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 25-29, 31-33, 35-39, 41-48, 50-54, 56-57, and 59-66 are purportedly found, and did not provide a motivation to combine Takeo and Fitzgerald with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element. Thus, Applicant respectfully submits that a prima facie case of the § 103

rejection has not been established for each of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

V. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, and Verard

Claims 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo, and further in view of U.S. Patent Application Publication 2004/0097805 (Verard).

A. Claims 49, 55, and 58

Claim 49 recites gating a medical procedure based at least in part on the determined position of the target region (wherein the position is based at least in part on a registration between an input image and a template). Claims 55 and 58 recite similar limitations. Kaufman does not disclose or suggest the above limitations. Rather, Kaufman discloses collecting images based on a size of the heart (14:10-24), and not based on a position of a target region, nor does Kaufman disclose that a position is determined based at least in part on a registration between an input image and a template. Takeo and Verard also do not disclose or suggest the above limitations, and are not being relied upon for the disclosure of the above limitations. Since none of the cited references discloses or suggests the above limitations, they cannot be combined to form the subject matter of claims 49, 55, and 58. For at least the foregoing reasons, Applicant requests that the § 103 rejection be withdrawn for these claims and their respective dependent claims.

B. No prima facie case of § 103 rejection for dependent claims 50-54, 56, 57, and 59-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 50-54, 56, 57, and 59-66 are found, and did not provide a motivation to combine Takeo and Verard with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element. Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for each of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

CONCLUSION

Based on the foregoing remarks, all claims are believed allowable. If the Examiner has any questions or comments regarding this amendment, the Examiner is respectfully requested to contact the undersigned at the number listed below.

To the extent that any arguments and disclaimers were presented to distinguish prior art, or for other reasons substantially related to patentability, during the prosecution of any and all parent and related application(s)/patent(s), Applicant(s) hereby explicitly retracts and rescinds any and all such arguments and disclaimers, and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**.

Respectfully submitted,

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